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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER


BEAULIEU, YONEL

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/605,351	Applicant(s) SYED ET AL. 	
	Examiner Yonel Beaulieu	Art Unit 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-20 is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/24/03</u> . | 6) <input type="checkbox"/> Other: _____ |

Claims Objection

~~Claims 11 and 12 are objected to because "an" (lines 7 and 6, respectively)~~

should be - - a - -.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 – 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The method in claim 1 is directed to "control of a vehicle." However, the claim has not set forth how the end result of "controlling" takes place; it appears the steps are not complete. As to claim 11, the method in this case is for "torque matching...to control noise, vibration and harshness due to a torque mismatch..." However, the recited steps have not set forth the metes and bounds of the intended use. Overall, undue experimentation is required and the skilled artisan would not know how to make or use the invention because of the above deficiency.

Claims linked to claim 1 are necessarily rejected based upon their dependency.

Allowable Subject Matter

~~Claims 12-20 are allowed over the prior art of record. A statement of reasons~~
supporting what is allowable will be provided in subsequent Office action(s).

Kuang et al. (US 2004/0168840 A1) teaches a system and method for a hybrid electric vehicle for controlling distribution of power from the vehicle battery and the vehicle engine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yonel Beaulieu whose telephone number is (703) 305-4072. The examiner can normally be reached on M-R, from 0900-1600.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas BLACK can be reached on (703) 305-8233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3661

Information regarding the status of an application may be obtained from the Patent-Application-Information-Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Y. BEAULIEU
AU 3661


YONEL BEAULIEU
PRIMARY EXAMINER



DOCUMENT-IDENTIFIER: US 20040168840 A1

TITLE: CLOSED-LOOP POWER CONTROL SYSTEM FOR HYBRID ELECTRIC VEHICLESAbstract Paragraph:

A control system and control method for a hybrid electric vehicle powertrain having an engine, an electric motor and an electric generator with gearing for effecting split power distribution from separate power sources. Power delivery to vehicle traction wheels is coordinated to meet a driver's demand for power as much as possible without violating predefined maximum and minimum powertrain limits, including the limits of the battery subsystem.

Summary of Invention Paragraph:

[0002] The invention relates to a control system for controlling distribution of power from a battery and an engine in a powertrain for a hybrid electric vehicle.

Summary of Invention Paragraph:

[0004] A powertrain for a hybrid electric vehicle has two sources of power. One source typically is an internal combustion engine, and the second source is a high voltage electric motor, usually an induction motor. One class of hybrid electric vehicle powertrains comprises parallel hybrid electric powertrains.

Summary of Invention Paragraph:

[0010] A vehicle system controller performs the coordination function in this split power powertrain. Under normal operating conditions, the vehicle system controller interprets the driver's demand for power as a function of acceleration or deceleration demand. It then determines when and how much torque each power source needs to provide to the transmission to meet the driver's power demand and to achieve specified vehicle performance (i.e., engine fuel economy, emission quality, etc.). The vehicle system controller determines the operating point of the engine torque and speed relationship.

Brief Description of Drawings Paragraph:

[0018] FIG. 4 is a schematic block diagram representation of a hybrid electric vehicle powertrain with only the motor and generator, together with the battery, acting as a power source;

Detail Description Paragraph:

[0024] The hybrid electric vehicle powertrain of the invention has a parallel-series configuration, as shown in FIG. 1. A vehicle system controller 10, a battery 12 and a transaxle 14, together with a motor-generator subsystem, comprise a control area network (CAN). An engine 16, controlled by module 10, distributes torque through torque input shaft 18 to transmission 14.

CLAIMS:

6. A closed-loop power control system for a powertrain for a hybrid electric vehicle comprising: an engine, a battery, a motor and a generator defining an electric drive system; a planetary gear unit having a sun gear, a ring gear and a planetary carrier, the engine being connected to the carrier and the sun gear being connected to the generator; a geared torque flow path defined by the electric drive

system extending to vehicle traction wheels, a torque input element of the electric drive system being connected to the motor; a vehicle system controller for coordinating power distribution from the engine and the battery to effect optimal powertrain performance within predefined battery power charging and discharging limits.

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DOCUMENT-IDENTIFIER: US 5961418 A

TITLE: Infinitely variable transmission

Brief Summary Text (13):

In order to achieve the aforementioned object, an infinitely variable transmission is provided which includes an input shaft connected to an output shaft of a power source; an output member connected to wheels; a continuously variable transmission having a first rotating member connected to the input shaft, a second rotating member, and speed-change operating means for changing a rotational ratio of the first rotating member to the second rotating member; a planetary gear set having at least first, second and third rotating elements, the first, second and third rotating elements being connected to the input shaft, the second rotating member and the output member respectively, so as to change a torque transmitting direction between both the rotating members based on changes in the rotational ratio of the continuously variable transmission, and to change a torque transmitting direction for transmitting output torque of the output member; and power control means for controlling output of the power source. The power control means establishes a positive driving state where torque is transmitted from the power source to the wheels when the rotational ratio of the continuously variable transmission is within a predetermined range from a neutral position where rotation of the output member becomes zero, if the output torque of the power source is smaller than a predetermined value that establishes a negative driving state where torque is transmitted from the wheels to the power source.

Brief Summary Text (20):

When the output torque of the power source is smaller than the predetermined value with the rotational ratio is within the predetermined range from the neutral position, the vehicle decelerates by inertia or braking operation. This range may generate a great engine braking effect or hinder smooth torque transmission. In this state, the power control means establishes the positive driving (drive) state where torque is always transmitted from the power source to the wheels. When an accelerator operating means such as the accelerator pedal is out of operation, the output torque of the power source such as the engine is smaller than the predetermined value. However, even if the accelerator pedal or similar device is slightly depressed, due to the transmission efficiency of the infinitely variable transmission, there is a range where the negative driving state is established. The predetermined value corresponds to a threshold value of the output torque of the engine or similar device for establishing the negative driving state.

Detailed Description Text (92):

Although in the above embodiments, an internal combustion engine such as a gasoline engine or a diesel engine is employed, the invention may be applied to a motor of an electric vehicle (EV) or an engine and a motor of a hybrid electric vehicle (HEV). Furthermore, although the belt-type continuously variable transmission is employed in the above embodiments, other types of continuously variable transmissions including a toroidal type may also be used.

Detailed Description Text (93):

According to the first structure of the invention, the power control means controls the output of the power source when the coasting (negative driving) state is likely

to occur. That is, the power control means performs the control when the rotational ratio is within the predetermined range and the output torque of the power source is smaller than the predetermined value, thereby preventing the negative driving state from occurring. It is thus possible to securely prevent great engine braking effect or hindrance of smooth torque transmission.

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